WEATHER OF THE ATLANTIC AND PACIFIC OCEANS

[The Marine Division, W. F. McDonald, in charge]

NORTH ATLANTIC OCEAN

By W. F. McDONALD

Atmospheric pressure.—The Atlantic area of high pressure was well developed and very steadily maintained over middle latitudes in July 1933. Hence, average barometer values were slightly above normal over much of the ocean. The greatest excess, 0.10 inch, was around Madeira. A slight deficiency in average pressure was noted between Labrador and Iceland, and also over Antillean waters. (See table 1.)

The highest pressures occurred between the Azores and Ireland on the 4th, and from the Azores to Bermuda on the 9th. Outside the Tropics and beyond the influence of tropical disturbances, the lowest barometer reading reported by any ship, the British steamship *Montrose*, was 29.41 inches off the Strait of Belle Isle on the 30th.

The lowest barometer reading, 28.51 inches, was reported by the American steamship *Lena Luckenbach*, very near the center of a tropical disturbance in the Gulf of Mexico, on July 5.

TABLE 1.—*Averages, departures, and extremes of atmospheric pressure (sea level) at selected stations for the North Atlantic Ocean and its shores, July 1933*

Stations	Average pressure	Departure	Highest	Date	Lowest	Date
	Inches	*Inch*	*Inches*		*Inches*	
Julianehaab, Greenland	29.69		30.12	24	29.33	2,5
Reykjavik, Iceland	29.77	−0.07	29.99	6	29.45	12
Lerwick, Shetland Islands	29.88	+.08	30.38	5	29.41	12
Valencia, Ireland	30.03	+.05	30.58	4	29.50	13
Lisbon, Portugal	30.10	+.08	30.29	9	29.93	26
Madeira	30.15	+.10	30.40	8	29.95	26
Horta, Azores	30.32	+.05	30.50	9	30.00	5
Belle Isle, Newfoundland	29.85	−.02	30.16	12	29.40	7
Halifax, Nova Scotia	30.00	+.05	30.32	4	29.44	1
Nantucket	30.00	+.02	30.27	3	29.62	1
Hatteras	30.03	+.02	30.22	4	29.80	12
Bermuda	30.15	−.03	30.26	19	30.00	3
Turks Island	30.02	−.05	30.10	19	29.70	27
Key West	29.99	−.04	30.08	23	29.89	2
New Orleans	29.97	−.03	30.15	30	29.81	12
Cape Gracias, Nicaragua	29.88	−.02	29.96	21	29.80	26

NOTE.—All data based on a.m. observations only with departures compiled from best available normals related to time of observation, except Hatteras, Key West, Nantucket, and New Orleans, which are 24-hour corrected means.

Cyclones and gales.—The lack of any barometer report lower than 29.41 inches from a ship on the northern trans-Atlantic routes, and the fact that the lowest reading shown for the land stations in table 1, also was well above 29 inches, indicate the absence of deeply developed cyclonic areas on the Atlantic in higher latitudes.

Gales were encountered in places along the main steamer routes on about half the days of the month. Storminess was most widespread between the 3d and 6th, and again from the 25th to 30th, when gales at higher latitudes occurred coincidently with tropical storms that attained hurricane intensity.

A sharp disturbance of no great extent, and relatively short lived, arose near Cape Hatteras on the 3d, moved northeastward past Cape Cod on the 4th, and produced fresh to strong gales, rising at times to the force of a whole gale along its course. The German liner *Europa* reported the highest wind at force 11 (storm) near latitude 40° N., longitude 68° W., on the 4th. This storm is shown on chart VIII.

Another disturbance of similarly brief history arose toward the end of the month in mid-Atlantic east of Bermuda, and caused strong gales on the 25th and 26th, as reported by the Dutch steamship *Barneveld* and the American steamship *Gateway City* and recorded in the accompanying table of gales and storms. The barometer did not fall below 29.76 inches, and this disturbance failed, after 2 days, to develop any further strength.

Fresh to whole gales occurred at widely separated intervals between the 6th and 30th on the northeastern Atlantic north of the 40th parallel and east of the 45th meridian. The major source of energy appears to have been the steady, rather strong, barometric gradient northward from the Azores HIGH, rather than the passage of any fully developed cyclonic area across the region of the gales.

Tropical disturbances.—Four disturbances of tropical origin affected the West Indies and Gulf of Mexico in July 1933. These are described at some length elsewhere in the present issue of the REVIEW.

Only two of these storms attained hurricane intensity, as reported by ships at sea. They are represented on charts VIII and XI, herewith. In the first instance, the American steamship *Lena Luckenbach*, en route from New Orleans to the Panama Canal, was at 3 a.m. on July 5, close to the center of a disturbance that had begun, over a week before, near Trinidad and, at the time of encounter, was progressing almost due westward across the middle Gulf of Mexico. It passed into Mexico near the Rio Grande the next day. The barometer on the *Lena Luckenbach* dropped to 28.51. The wind reached full hurricane intensity for a short time, and at the height of the storm shifted from north through west to south.

Minor disturbances passed from the vicinity of St. Kitts to Vera Cruz, between July 14th and 19th; and from near Progreso, Mexico, to Matagorda Bay, between July 21st and 23d.

The last tropical storm of the month, originated near Antigua on the 25th, moved almost due northwestward over the Bahamas, then turned westward into the Gulf of Mexico which it entered on the last day of the month and thence moved on slowly westward to the Rio Grande during the first five days of August. Nothing beyond moderate to fresh gales was reported from ships along the track until the storm reached the Bahamas, when, on the 28th, the Norwegian steamer *Noreg* recorded a southeast wind of force 11, a short distance east of Eleuthera Island. Strong gales to storm winds were reported, in the two days that followed, over the heavily traveled Gulf Stream route east of the Florida Peninsula, and on the 30th, during early morning hours, the American steamship *El Almirante* experienced a southeast hurricane, about 40 miles east of Jupiter Inlet.

The further history of this storm in the Gulf of Mexico will be briefly reported in next month's issue.

Trade winds of the Caribbean.—The trades of the western Caribbean were considerably intensified between July 8 and 10, rising to force 7 over a wide area, and attaining gale force (8) on the 9th near Old Providence Island. No center of disturbance appeared.

Fog.—Fog frequency was about normal, with the greatest prevalence between the Grand Banks and the American coast north of Cape Hatteras, where fog occurred on 10 to 20 days during the month. The frequency diminished eastward to only 2 to 4 days over the waters off the European coast.

Trans-Atlantic aviation.—Two flights across the Atlantic were successfully accomplished in July 1933. The

first was the westward passage, from Reykjavik, Iceland, to Cartwright, Labrador, of 24 Italian seaplanes manned by more than 100 officers and men commanded by General Italo Balbo. Chart IX, for July 12, depicts the weather conditions attending this largest undertaking in the annals of ocean aviation.

A few days later, Mr. Wiley Post, American pilot, set out from New York on the trans-Atlantic leg of his solo flight around the world. He landed safely in Berlin within 26 hours after take-off, thus setting a speed and distance record for the crossing. Chart X reproduces the synoptic map of July 15, in connection with Post's flight.

OCEAN GALES AND STORMS, JULY 1933

Vessel	Voyage		Position at time of lowest barometer		Gale began	Time of lowest barometer	Gale ended	Lowest barometer	Direction of wind when gale began	Direction and force of wind at time of lowest barometer	Direction of wind when gale ended	Direction and highest force of wind	Shifts of wind near time of lowest barometer
	From—	To—	Latitude	Longitude									
NORTH ATLANTIC OCEAN			° ′	° ′				*Inches*					
Dakotian, Br.S.S.	Liverpool	Boston	47 49 N	50 25 W	July 1	Mdt. July 1.	July 2	29.27	SW	SW, 9	N	SW, 9	SW-W.
Santa Elisa, Am. S.S.	Cristobal	Habana	23 00 N	84 03 W	July 2	4a, 3	July 3	29.45	NNE		SSE	SE, 9	E-SE.
Carrillo, Am. S.S.	New Orleans	do	24 20 N	84 42 W	July 3	Noon, 3	do	29.59	E	ESE, 9	S	ESE, 9	E-ESE.
Fernbrook, Nor. M.S.	Colon	Baltimore	36 03 N	75 23 W	do	8a. 3	do	29.86	NE	SW, 4	NE	NE, 8	SW-W-NE.
John D. Archbold, Am. S.S.	Corpus Christi.	New York	24 24 N	88 00 W	July 4	Noon, 4.	July 4	29.28	NE		SSE	W, 10	W-SW.
Sylvan Arrow, Am.S.S.	Beaumont	do	25 25 N	88 20 W	do	3p, 4	July 5	29.13	NNE	WNW, 11	SE	W, 11	NNW-SW.
Europa, Ger.S.S.	New York	Cherbourg	39 42 N	67 55 W	do	2p, 4	July 4	29.57	NNE	NE, 11	SSE	NNE, 11	NE-SE.
Gripsholm, Swed.M.S.	do	Gothenburg	40 40 N	67 55 W	do	4p, 4	do	29.70	NE	NE, 10	E	NE, 10	
Geo. H. Jones, Am.S.S.	New Orleans	New York	25 20 N	90 30 W	do	1a, 5	July 5	28.66	NNW	SE, 11	SE	NW-SE, 11.	WNW-SE.
Lena Luckenbach, Am. S.S.	do	Panama	25 32 N	90 40 W	do	3a, 5	do	28.51	NE		SE	NW, 12	N-W-S.
E. M. Clark, Am.S.S.	New York	CorpusChristi	24 36 N	94 51 W	July 3	3a, 6	July 6	29.41	NNE	SSW, 10	E	SW, 10	SW-SSW-S.
Nashaba, Am.S.S.	Antwerp	Tampa	44 30 N	17 30 W	July 5	10a, 6	do	29.50	S	W, 10	W	W, 10	Steady.
Adria, Ger.S.S.	Las Piedras	Dundee	45 18 N	42 36 W	July 7	4a, 8	July 9	29.97	SSW	SW, 7	WNW	SW, 8	SSW-SW-WNW.
Lena Luckenbach, Am. S.S.	New Orleans	Panama	13 $\overline{32}$ N	80 32 W	July 9	2a, 9	do	29.83	E	E, 7	E	E, 8	Steady.
Black Falcon, Am.S.S.	Antwerp	New York	46 15 N	40 50 W	July 11	9p, 11	July 12	30.00	WSW	WSW, 7	W	W, 8	WSW-W.
Jean Jadot, Belg.S.S.	New York	Antwerp	48 10 N	29 08 W	do	8p, 12	July 13	29.94	WSW	WNW, 9	NW	NW, 9	W-WNW-NW.
Katendrecht, Du.M.S.	Rouen	Philadelphia	49 20 N	22 16 W	July 12	8p, 12	do	29.71	W	W, 7	WNW	W, 8	Steady.
Statendam, Du.S.S.	Rotterdam	New York	49 59 N	20 14 W	July 14	2p, 14	July 14	29.79	W	W, 8	NW	—, 8	W-WNW-NW.
Dresden, Ger.S.S.	Galway	do	51 12 N	25 54 W	July 18	5a, 18	July 18	29.46	SSE	W, 8	WNW	W, 8	SSW-W.
Daytonian, Br.S.S.	Guadeloupe	Havre	17 37 N	60 47 W	July 25	11a, 25	July 25	29.87	NE	NE, —	E	E, 9	NE-ENE-E.
Barneveld, Du.S.S.	Caracas	Liverpool	32 36 N	53 04 W	July 24	8a, 25	do	29.76	N	SSE, 9	SE	SSE, 9	None.
Gonzenheim, Ger.S.S.	Antwerp	Botwood	51 56 N	19 26 W	July 25	2p, 25	do	29.38	SW	NW, 8	NW	NW, 9	SE-NW.
Gateway City, Am.S.S.	London	Panama City, Fla.	34 02 N	51 05 W	do	3a, 26	July 26	29.84	SSE	SSW, 8	WSW	SSW, 8	SSE-SSW-SW.
Emilia, Am.S.S.	New York	San Juan	[1] 21 00 N	65 30 W	July 26	Mdt., 26	do	29.97	ENE	SE, 6	SE	E, 8	Steady.
Noreg, Nor.S.S.	Bordeaux	Aruba	25 02 N	75 18 W	July 28	10a., 28	July 29	29.58	E	SE, —	SE	SE, 11	
Gulflight, Am.S.S.	New York	Port Arthur	28 20 N	77 30 W	July 29	11p., 29	July 30	30.02	E	ESE, 7	SE	E, 8	E-SE.
New York, Ger.S.S.	Cherbourg	New York	49 54 N	8 12 W	do	4a., 29	do	29.84	S	S, 4	NW	W, 8	SW-W.
Saccarappa, Am.S.S.	Antwerp	Charleston	50 15 N	37 00 W	do	11a., 29	July 29	29.73	NE	N, 7	N	N, 8	NE-N.
President Harding, Am. S.S.	Cobh	New York	50 42 N	22 00 W	July 30	5a., 30	July 30	29.53	S	SW, 9	NW	WNW, 10	S-WSW.
Peten, Am.S.S.	New York	Habana	26 46 N	79 21 W	July 29	2a., 30	do	29.64	E	Var., 2	WSW	SW, 10	NE-SW.
El Almirante, Am.S.S.	Galveston	Boston	27 03 N	79 35 W	July 30	4a., 30	do	29.46	W	SE, 12	SE	SE, 12	W-SE.
Jean Jadot, Belg.S.S.	Antwerp	New York	49 35 N	18 53 W	do	6a., 30	do	29.80	SSW	SSW, 6	NNW	WNW, 9	W-NW.
NORTH PACIFIC OCEAN													
Brandywine, Am.S.S.	Los Angeles	Portland, Oreg.	40 12 N	124 44 W	July 5	11p., 5	July 7	29.86	NW	NW, 7	NW	NW, 8	NW-N.
Toba Maru, Jap.S.S.	Balboa	Los Angeles	15 40 N	97 55 W	July 7	2p., 7	July 8	[2] 29.70	ESE	E, 7	SSW	S, 7	Var.
City of Elwood, Am.S.S.	do	do	16 25 N	100 36 W	July 8	4a., 8	do	29.68	SSW	Var., 8	SSW	SSW, 9	Var.
Memphis City, Am.S.S.	Los Angeles	Balboa	[1] 17 30 N	102 00 W	do	5p., 8	do	29.56	NNE	NNE, —	SW	NNE, 8	NNE-SW.
Hofuku Maru, Jap.S.S.	do	do	17 13 N	101 15 W	do	7a., 8	do	[2] 29.60	SSW	SSW, 8	SE	SSW, 9	SSW-SSE.
Neches, U.S.S.	San Diego	do	7 55 N	83 57 W	July 22	4a., 22	July 22	29.80	SSW	W, 4	SSW	SE, 12	SE-S.
Drechtdyk, Du.S.S.	Los Angeles	do	16 12 N	99 44 W	July 29	1p., 29	July 29	29.80	NE	ESE, 7	SSE	E, 8	E-SE.
Holystone, Br.S.S.	Panama	Vancouver	16 33 N	100 52 W	do	4p., 29	do	29.62	NNE	ESE, 9	WSW	WSW, 12	ESE-WSW.
Golden Star, Am.S.S.	Philippines	San Francisco	18 17 N	135 05 E	July 28	do	July 30	29.52	E	ESE, —	S	E, 10	E-ESE-SE.
Michigan, Am.S.S.	do	do	20 30 N	132 12 E	July 30	Mdt., 30	July 31	[2] 28.92	ENE	ESE, 12	SSW	E, 12	Do.

[1] Position approximate.

[2] Barometer uncorrected.

NORTH PACIFIC OCEAN, JULY 1933

By WILLIS E. HURD

Atmospheric pressure.—A great and practically unbroken high-pressure area covered the major part of the North Pacific Ocean during July 1933. Pressures were above normal from the Bering Sea southward to Honolulu and Midway Island, and along the northern coast of the United States, and were below normal from California southward, and in the extreme southwestern part of the ocean. Some unimportant depressions appeared in northern latitudes of the Pacific, but the Aleutian LOW was largely indicated as having receded to the Arctic Ocean (Point Barrow, 29.76 inches).

TABLE 1.—*Averages, departures, and extremes of atmospheric pressure at sea level, North Pacific Ocean, July 1933, at selected stations*

Stations	Average pressure	Departure from normal	Highest	Date	Lowest	Date
	Inches	*Inch*	*Inches*		*Inches*	
Point Barrow	29.76	−0.16	30.16	14	29.34	4
Dutch Harbor	29.98	+.04	30.44	1	29.52	27, 29
St. Paul	29.96	+.12	30.34	14	29.34	28
Kodiak	29.92	−.02	30.18	14	29.60	9
Juneau	30.01	−.04	30.37	14	29.55	1
Tatoosh Island	30.12	+.07	30.36	4	29.73	1
San Francisco	29.89	−.06	30.11	3	29.73	27
Mazatlan	29.84	−.09	29.94	14	29.66	8
Honolulu	30.07	+.05	30.16	1	29.97	22
Midway Island	30.19	+.08	30.28	1	30.06	31
Guam	29.79	−.05	29.86	16	29.70	3
Manila	29.75	−.05	29.86	1	29.58	28
Naha	29.76	+.04	29.92	6	29.22	31
Chichishima	29.89	+.04	30.08	25	29.74	9
Nemuro	29.88		30.12	30	29.46	23

NOTE.—Data based on 1 daily observation only, except those for Juneau, Tatoosh Island, San Francisco, and Honolulu, which are based on 2 observations. Departures are computed from best available normals related to time of observation.